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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Docket No: Q62053

Nobuyoshi YAGI, et al.

Appln. No.: 09/769,376

Group Art Unit: 1774

Confirmation No.: 5759

Examiner: Tamra DICUS

Filed: January 26, 2001

For: RESIN SUBSTRATE FOR OPTICAL USE

SUBMISSION OF APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. A check for the statutory fee of \$500.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

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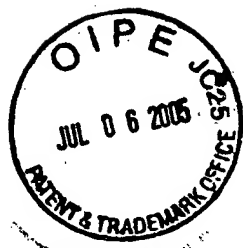
CUSTOMER NUMBER

Respectfully submitted,

John K. Shin

Registration No. 48,409

Date: July 6, 2005



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For: RESIN SUBSTRATE FOR OPTICAL USE

**APPEAL BRIEF UNDER 37 C.F.R. § 41.37**

**MAIL STOP APPEAL BRIEF - PATENTS**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellants submit the following:

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**I. REAL PARTY IN INTEREST**

The real party in interest is Nitto Denko Corporation, the assignee of the present application. The assignment was recorded on January 26, 2001, at reel 011491, frame 0672.

## **II. RELATED APPEALS AND INTERFERENCES**

Appellants, Appellants' counsel, and the assignee of the application are not aware of any other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**III. STATUS OF CLAIMS**

Claims 1 and 3-6 are pending in the application.

Claim 2 was previously cancelled. Claims 1 and 3-6 are rejected.

Claims 1 and 3-6 are being appealed.

Claims 1 and 3-6 are set forth in their entirety in the Claims Appendix submitted herewith.

**IV. STATUS OF AMENDMENTS**

No amendment or other response was filed subsequent to the final Office Action mailed December 29, 2004. This appeal was taken directly from the final Office Action.

**V. SUMMARY OF THE CLAIMED SUBJECT MATTER**

Claim 1 is drawn to a liquid-crystal cell substrate. Page 22, lines 16-21. The liquid-crystal cell substrate comprises a multilayer structure. Page 3, lines 1-6. The multilayer structure must have a surface roughness,  $R_a$ , of 0.8 nm or lower on at least one side. Page 3, lines 21-24. The multilayer structure must also have an average thickness of from 100 to 800  $\mu\text{m}$ . Page 3, lines 21-24. The multilayer structure also comprises a layer of a cured epoxy resin as a base layer. Page 3, lines 11-14.

Claim 2 was previously canceled.

Claim 3 is an independent claim. Claim 3 is drawn to a resinous multilayer structure for optical use. Page 3, lines 21-24. The resinous multilayer structure comprises a resinous multilayer structure having a surface roughness,  $R_a$ , of 0.8 nm or lower on at least one side and having an average thickness of from 100 to 800  $\mu\text{m}$ . Page 3, lines 21-24. The resinous multilayer structure comprises a layer of a cured epoxy resin as a base layer. Page 3, lines 11-14. The resinous multilayer structure, further comprises a transparent hard coat layer having a thickness of 0.1  $\mu\text{m}$  or larger as a surface layer (Page 12, lines 1-5) and a poly(vinyl alcohol)-based gas barrier layer as an intermediate layer between the hard coat layer and the base layer. Pages 26-27, bridging paragraph.

Claims 4-6 are dependent claims. Each of Claims 4-6 depend from Claim 1.

Claim 4 narrows the range for surface roughness of the liquid crystal cell substrate, reciting that the surface roughness  $R_a$  is 0.2 nm or lower. Page 3, lines 21-24.

Claim 5 narrows the average thickness of the multilayer structure to from 200 to 500  $\mu\text{m}$ .

Page 22, lines 16-21.

Claim 6 presents a Markush grouping for the epoxy resin of Claim 1. The epoxy resin is selected from the group consisting of a bisphenol A type epoxy resin, an alicyclic type epoxy resin, and a triglycidyl isocyanurate type epoxy resin. Page 13, lines 4-7.



**VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

The issues presented for review are as follows:

Whether the Examiner erred in rejecting Claims 1 and 4-6 under 35 U.S.C. § 112, second paragraph, as assertedly being indefinite;

Whether the Examiner erred in rejecting Claims 1 and 4-5 under the judicially created doctrine of obviousness-type double patenting as assertedly being unpatentable over Claim 1 of U.S. Patent No. 6,500,518 to Sugawa et al.;

Whether the Examiner erred in rejecting Claims 1 and 3-6 under 35 U.S.C. § 102(e) as assertedly being anticipated by U.S. Patent No. 6,500,518 to Sugawa et al.;

Whether the Examiner erred in rejecting Claims 1 and 3-5 under 35 U.S.C. § 102(e) as assertedly being anticipated by U.S. Patent No. 6,136,444 to Kon et al.; and

Whether the Examiner erred in rejecting Claim 6 under 35 U.S.C. § 103(a) as assertedly being unpatentable over Kon et al. in view of U.S. Patent No. 6,261,664 to Beeson et al.

## **VII. ARGUMENT**

### ***Summary of Examiner's Interview***

Appellants' representative called the Examiner for an interview on December 15, 2004, to discuss with the Examiner certain points raised in the Amendment filed December 2, 2004, particularly to emphasize the difference in surface profile between the present invention and Sugawa '518 based on the results in the Table on page 5 of the Amendment. No agreement was reached.

### ***Response to Claim Rejection - 35 U.S.C. § 112***

Claims 1 and 4-6 are rejected under 35 U.S.C. § 112, second paragraph, as assertedly being indefinite. The Examiner states that it is not clear where the surface roughness requirement occurs, e.g., on the multilayer structure or the epoxy resin layer.

#### **The Error in the Rejection**

The error in the rejection is that the claims are definite as written.

#### **Why Claims 1 and 4-6 Comply with 35 U.S.C. § 112, Second Paragraph**

As noted, the Examiner states that it is not clear where the surface roughness occurs, e.g., on the multilayer structure or the epoxy resin layer. Appellants respectfully disagree. The plain meaning of the claim language: "A liquid-crystal cell substrate which comprises a multilayer structure having a surface roughness,  $R_a$ , of 0.8 nm or lower on at least one side..." is that it is at least one side of the multilayer structure which has a surface roughness  $R_a$  of 0.8 nm or less. While the epoxy resin layer is a component layer on one side of the multilayer structure and

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generally the outer surface of the epoxy resin layer will have a surface roughness  $R_a$  of 0.8 nm or less, this is not a requirement of the claim language as written. The opposite side of the multilayer structure (or both sides of the multilayer structure) may have the recited surface roughness, thus satisfying the claim.

The excellent surface smoothness of the liquid crystal cell substrate is based on the low surface roughness  $R_a$  of at least one side of the multilayer structure. This is clear from the language of the claims reciting “a multilayer structure having a surface roughness,  $R_a$ , of 0.8 nm or lower on at least one side”. It is clear to one skilled in the art that the surface roughness of 0.8 or lower on at least one side of the resinous multilayer structure can be satisfied either from the topside having the cured epoxy resin layer (base layer) as the uppermost layer (see Fig. 1, top of element 7) or from the bottomside of the easily peelable resin layer (see Fig. 1, bottom of element 5). For example, Appellants point to Example 1 as reciting that “the surface roughness  $R_a$  of each of the front and back sides of the resin substrate for optical use was measured with respect to 10 points in an inner 420 mm-square area thereof. As a result, the average thereof was 0.2 nm on the free surface side made of the epoxy resin, and was 10 nm on the other surface side made of the urethane resin, which surface side was peeled from the belt.” (see Example 1, at page 28, lines 9-15). Example 1 indicates one way in which the low surface roughness of the multilayer resinous structure, as measured from the topside of the epoxy resin layer, satisfies the requirement of the claims. Thus, Claims 1 and 4-6 are definite as written and comply with the requirements of 35 U.S.C. § 112, second paragraph.

Accordingly, Appellants respectfully request reversal of the §112 indefiniteness rejection.

***Response to Double Patenting Rejection Over Sugawa***

Claims 1 and 4-5 stand rejected under the judicially created doctrine of obviousness-type double patenting as assertedly being unpatentable over Claim 1 of U.S. Patent No. 6,500,518 to Sugawa et al.

The Examiner maintains that although the conflicting claims are not identical, they are assertedly not patentably distinct from each other because the present claims differ only in the recitation of the surface roughness values of 0.8 nm (and 0.2 nm) or lower. The Examiner views the surface roughness ranges as obvious limitations as Sugawa claims a smooth surface. While the roughness value of 0.8 nm is not claimed by Sugawa, the Examiner considers the surface roughness range to be inherent. Further, the Examiner points to Sugawa at col. 3, line 40, where a surface roughness value is taught within the range of 0.2 micrometers [*sic* - 0.02  $\mu\text{m}$ ] or less, assertedly falling within the Appellants' ranges of 0.8 nm or lower (Claims 1 and 3) and 0.2 nm or lower (Claim 4).

The Error in the Rejection

The error in the rejection is that not each and every element of at least Appellants' independent Claim 1 is disclosed or rendered obvious by Sugawa's Claim 1.

Why Claims 1 and 4-6 are Patentably Distinct from Sugawa's Claim 1

The subject matter of Claim 1 of Sugawa '518 does not render obvious each and every limitation of the present invention. Claim 1 of the Sugawa '518 patent does not render obvious

at least the requirement of “a multilayer structure having a surface roughness,  $R_a$ , of 0.8 nm or lower on at least one side”, as presently claimed.

Sugawa ‘518 does not necessarily teach or suggest the claimed  $R_a$  range of 0.8 nm or lower of the claimed multilayer structure. As the Examiner recognizes, the Sugawa ‘518 patent does not claim such a range. The examples of the Sugawa ‘518 patent do not even measure surface roughness of either the support or the surface of the resin layer.

Sugawa ‘518’s Claim 1 only recites “smooth surface”. It is improper for the Examiner to look outside of the claims by attempting to define the “smooth surface” language of Claim 1 of Sugawa ‘518 in the specification when the specification itself does not explicitly set out a definition for the term.

Although the Examiner points to Sugawa, at col. 3, line 40, as disclosing a surface roughness value of 0.02 micrometers or less (i.e., converted to 20 nm or less), which assertedly falls within Appellants’ claimed range of 0.8 nm (and 0.2 nm) or lower, Appellants kindly refer the Board to the full sentence in that citation which describes that “an epoxy optical sheet having a mirror surface can be obtained by using *a support with a surface roughness* ( $R_a$ ) of 0.02  $\mu\text{m}$  or less.” (emphasis added) (Sugawa at col. 3, lines 38-40). That is, Sugawa only measures the surface roughness of the support and gives no measurement for the surface roughness of the epoxy optical sheet, while on the other hand, the present invention requires that at least one side of the multilayer structure have a surface roughness of 0.8 nm or lower, and does not signify a surface roughness measurement for the structurally separate support.

Regarding the measurement of surface roughness itself, there is a significant difference between achieving a “smooth surface” of around  $0.02\text{ }\mu\text{m}$  or less (i.e., around  $20\text{ nm}$  or less) on the support of Sugawa and achieving a significantly lower  $R_a$  range of  $0.8\text{ nm}$  or less on at least one side of the multilayer structure according to the present invention. A difference in two orders of magnitude in  $R_a$  between the present invention and the single cited measurement of the support in Sugawa refutes the Examiner’s assertion of inherency, even if the same epoxy resin may have been used, because Sugawa’s surface measurement was taken for the support, which says nothing about surface roughness of at least one side of the multilayer structure according to the present invention.

Furthermore, Sugawa’s Claim 1 is directed to an “epoxy optical sheet” instead of a “liquid-crystal cell substrate” of the present invention. Even if Sugawa’s epoxy optical sheet could be used as a liquid-crystal cell substrate, it would not likely exhibit good performance.

The present invention displays good performance, for example, when the outer surface of the epoxy resin layer in the recited multilayer structure has a surface roughness as claimed. According to Example 1 of the present application, when a multilayer structure having surface roughnesses  $R_a$  of  $0.2\text{ nm}$  and  $10\text{ nm}$ , respectively, (satisfying an  $R_a$  of  $0.8$  or less on at least one side) was used as the liquid crystal cell substrate, no light leakage was observed. On the other hand, according to the Comparative Example, when a substrate having a surface roughness  $R_a$  of  $15\text{ nm}$  on both sides was used as the liquid crystal cell substrate, light leakage was observed. At best, the disclosure of Sugawa would be comparable to the Comparative Example of the present invention, because even if Sugawa’s epoxy optical sheet matched the surface roughness of its

support, approximately 20 nm or less, the epoxy optical sheet would likely exhibit light leakage even if it could be used as a liquid crystal cell substrate. The significance and effect of the surface roughness Ra of 0.8 nm or lower on at least one side of the multilayer structure according to present invention are not disclosed or rendered obvious from Claim 1 of the Sugawa '518 patent. Thus, Sugawa fails to disclose or render obvious at least the surface roughness range of the at least one side of the multilayer structure of the present invention.

Accordingly, the present invention is patentably distinct from Claim 1 of the Sugawa '518 patent. Likewise, dependent Claims 4-5 are patentably distinct from Claim 1 of the Sugawa '518 patent for at least the same reasons.

Therefore, Appellants respectfully request reversal of the obviousness-type double patenting rejection in view of Sugawa's Claim 1.

***Response to Anticipation Rejection Over Sugawa***

B. Claims 1 and 3-6 stand rejected under 35 U.S.C. § 102(e) as assertedly being anticipated by U.S. Patent No. 6,500,518 to Sugawa et al.

Regarding the limitation to a "liquid-crystal cell substrate", the Examiner asserts that the sheet of Sugawa is a functional equivalent to a "liquid-crystal cell substrate" because the same materials are provided and because the substrate can be used for liquid crystal cell substrates.

Regarding the limitation that "the multilayer structure comprises a layer of a cured epoxy resin as a base layer", the Examiner asserts that Sugawa also provides this feature.

**The Error in the Rejection**



The error in the rejection is that not each and every element of independent Claim 1 is found, either expressly or inherently described, in Sugawa.

Why Claims 1 and 3-6 are Patentable Under 35 U.S.C. § 102

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631 (Fed. Cir. 1987); MPEP §2131. The identical invention must be shown in as complete detail as is contained in the claim. Richardson v. Suzuki Motor Co., 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The Sugawa '518 Patent fails to disclose each and every element of Applicants' claimed invention.

The present invention is characterized in that when the surface roughness  $R_a$  of the multilayer structure is 0.8 nm or lower on at least one side, and the multilayer structure is used as a liquid crystal cell substrate, excellent optical properties are obtained. The effect of the present invention is clear from a comparison between the Example and the Comparative Example as previously described above in the response to the double patenting rejection.

The Sugawa '518 patent does not anticipate at least the claimed "multilayer structure having a surface roughness,  $R_a$ , of 0.8 nm or lower on at least one side". Although the Examiner cites a description of "0.02  $\mu\text{m}$  or less" at column 3, line 40 in the '518 patent, Appellants previously explained above in discussing the double patenting rejection that Sugawa's description, when taken in context, refers to the surface roughness  $R_a$  of the support of 0.02  $\mu\text{m}$

or less (equivalent to 20 nm or less), which value is still 25 fold that of the surface roughness  $R_a$  of 0.8 nm or lower of at least one side of the multilayer structure as required by the present claims, to which the excellent optical properties of the present invention are attributed. Sugawa's surface roughness measurement of its support fails to anticipate the claimed surface roughness range of at least one side of the multilayer structure employed in a liquid-crystal cell substrate of the present invention.

The present invention is an improvement over Sugawa '518. Appellants emphasize that Sugawa is silent regarding "the  $R_a$  of 0.8 nm or lower" of at least one side of the multilayer structure and further explain Sugawa's lack of description on  $R_a$  of 0.8 nm or lower more specifically. Appellants show the results of the comparison between Example 1 of the present invention and Example 1 of the Sugawa '518 patent in the following table.

	The present invention	The '518 patent
Average thickness ( $\mu\text{m}$ )	400	400
Thickness precision (standard deviation) ( $\mu\text{m}$ )	7	$\pm 40$ or lower
$R_a$ (nm)	0.2	Not measured (not described). <u>It is considered that <math>R_a</math> should be 0.8 nm or more.</u>

Because Sugawa '518 discloses that the thickness accuracy or precision of its epoxy optical sheet is as large as  $\pm 40 \mu\text{m}$  or lower (see col. 7, lines 45-51), Sugawa cannot realistically achieve a surface roughness value of  $R_a=0.8 \text{ nm}$  or lower. In the present invention, the standard precision of thickness of  $7 \mu\text{m}$  (see page 28, lines 7-9) can also be stated as having a "thickness precision" of  $\pm 7 \mu\text{m}$  or lower. The "thickness precision" is relative to  $R_a$ . In other words, the

larger the value of the thickness precision, the larger the resultant  $R_a$  value of the epoxy resin layer. On the other hand, the smaller the value of the thickness precision, the smaller the resultant  $R_a$  value of the epoxy resin layer. In the present invention, because the "thickness precision" is a small value of  $\pm 7 \mu\text{m}$ ,  $R_a$  becomes a smaller value of 0.2 nm.

Appellants kindly point out that the Examiner has again miscalculated the conversion of Sugawa's surface roughness range of 0.02  $\mu\text{m}$  or less as being equivalent to 0.2 nm or less (see Office Action mailed December 29, 2004, at page 5, third line from the bottom), instead of the proper conversion to 20 nm or less.

The Examiner's assertion that Sugawa's epoxy optical sheet having a mirror surface should be interpreted as having a surface roughness range of 0.02  $\mu\text{m}$  or less in view of the specification is fundamentally mistaken (see Sugawa '518, at col. 3, lines 40-41). When taken in context, Sugawa describes that "*an epoxy optical sheet having a mirror surface can be obtained by using a support with a surface roughness ( $R_a$ ) of 0.02  $\mu\text{m}$  or less*" (emphasis added) (col. 3, lines 38-41). On the other hand, Appellants disclose that "a multilayer structure having a surface roughness  $R_a$  of 0.8 nm or lower, preferably 0.2 nm or lower on at least one side ....can be produced, for example, by a method which comprises forming an easily peelable resin layer *on a support having a smooth surface, e.g., a mirror surface*, and spreading in a sheet [to] form a resinous coating fluid becoming a base layer on that resin layer to form a film serving as the base layer." (emphasis added) (see pages 3-4, bridging paragraph).

In other words, Sugawa describes how the end product as an epoxy optical sheet achieves a certain “mirror surface”, while the present invention describes an improvement over Sugawa by starting off with a support having a “mirror surface” to achieve an end product as the epoxy resin layer having a surface roughness even smoother, relatively, than a “mirror surface” of the support by achieving a surface roughness of 0.8 nm (and 0.2 nm) or lower. While Sugawa starts with a support having a surface roughness of 20 nm or less (see col. 3, lines 40-41) and a thickness accuracy in one example of  $\pm 40 \mu\text{m}$  (see col. 7, lines 45-51), the present invention starts with a support (such as a stainless steel belt) having a surface roughness, in one example, of 10 nm and a much lower thickness accuracy of  $\pm 7 \mu\text{m}$  (see Example 1, at page 26, first full paragraph; and page 28, lines 7-9). Thus, Sugawa’s different starting conditions would fail to achieve Appellants’ claimed invention.

Based on the foregoing reasons, Appellants submit that Sugawa ‘518 does not anticipate or render obvious the present claims.

Accordingly, Appellants respectfully request reversal of the Examiner’s anticipation rejection over Sugawa ‘518.

***Response to Anticipation Rejection Over Kon et al.***

Claims 1 and 3-5 stand rejected under 35 U.S.C. § 102(e) as assertedly being anticipated by U.S. Patent No. 6,136,444 to Kon et al.

Regarding the limitation to a “liquid-crystal cell substrate”, the Examiner asserts that the sheet of Kon is a functional equivalent to a “liquid-crystal cell substrate” because the same materials are provided and cites Kon as teaching the invention used in liquid crystal displays.

Regarding the limitation to “the multilayer structure comprises a layer of a cured epoxy resin as a base layer”, the Examiner asserts that Kon also provides this feature: “Applicant teaches the epoxy is (7) in Figure 1 of the instant disclosure being an outer layer, and Kon teaches 9 and 8 as outer layers above the substrate of polycarbonate. See Figures 3 and 4 of Kon. Thus the cured epoxy resin functions as a base layer. See col. 15, lines 3-18.”

#### The Error in the Rejection

The error in the rejection is that each and every element of independent Claim 1 is not found, either expressly or inherently, in Kon et al.

#### Why Claims 1 and 3-5 are Patentable Under 35 U.S.C. § 102

Kon fails to anticipate each and every element of Appellants’ claimed invention.

For example, Kon describes the surface roughness of an interior layer, or bottom layer, polycarbonate/plastic substrate. The Examiner’s reference to Kon’s “a surface roughness Ra of 1 nm or less on the side of the sheet which contacts the air during formation of the sheet” (col. 18, lines 37-39) only describes the top of Kon’s polycarbonate transparent plastic substrate (first applied layer). Kon’s transparent plastic substrate cannot be applied against Appellants’ multilayer structure or Appellants’ cured epoxy resin layer because the present invention (embodiment of Claim 3) requires a multilayer structure including not only a transparent hard

coat layer as a surface layer on the support but also a cured epoxy resin layer formed afterwards, such that Kon's transparent plastic substrate by itself could not be equivalent to Appellants' later formed epoxy resin layer.

In other words, Kon's transparent plastic substrate is at most applicable against Appellants' transparent hard coat layer, before the formation thereon of a cured epoxy resin layer. Although Kon discloses outer layers 9 (transparent conductive layer) and 8 (organic solvent-resistant layer), these layers measured much larger  $R_a$ 's. Applicants' multilayer structure having an  $R_a$  of 0.8 nm or less on at least one side is distinguishable from Kon's outer layers 9 (transparent conductive layer) and 8 (organic solvent-resistant layer), with much larger  $R_a$ 's measured, for example, in Kon's Example 1 of  $R_a=8.3$  nm on the belt side where the solvent-resistant layer is applied (col. 24, lines 22-33; and col. 25, lines 1-2) and of  $R_a=4.1$  nm on the transparent conductive layer surface (col. 24, lines 28-29). Thus, as it is not the  $R_a$  of the topside of Appellants' transparent hard coat layer that must be 0.8 nm or less, but the  $R_a$  of Appellants' at least one side of a multilayer structure, such as the topside of Appellants' cured epoxy resin layer, Kon fails to disclose each and every element of Appellants' claimed invention.

Furthermore, Kon is silent about the use of an epoxy resin as a base layer. Thus, Kon's silence on this element clearly distinguishes the present invention from Kon. Because the use of the epoxy resin as the base layer in the present invention improves the heat resistance of the resulting substrate, when the substrate is used as a liquid-crystal cell substrate, the cell substrate can be used for a long period of time. On the other hand, Kon is silent about any effect on durability.

Accordingly, Appellants respectfully request reversal of the rejection under 35 U.S.C. §102(e) in view of Kon '444.

***Response to Obviousness Rejection Over Kon and Beeson***

Claim 6 stands rejected under 35 U.S.C. § 103(a) as assertedly being unpatentable over U.S. Patent No. 6,136,444 to Kon et al. in view of U.S. Patent No. 6,261,664 to Beeson et al.

The Examiner asserts that “liquid cell substrate” does not differentiate from the prior art of record because the same materials, roughness values, and thicknesses are provided for, along with the use of resinous substrate as a liquid crystal display and forming liquid crystal cell substrates using liquid crystals.

The Error in the Rejection

The error in the rejection is that the combination of Kon with Beeson still fails to achieve the present invention of Claim 6.

Why Claim 6 is Patentable Under 35 U.S.C. § 103

The combination of Kon with Beeson fails to render obvious the present invention of Claim 6.

Appellants rely on their response to the Examiner’s anticipation rejection over Kon given herein to address the Examiner’s obviousness rejection over Kon in view of Beeson.

Furthermore, the combination of Kon and Beeson fails to render *prima facie* obvious the presently claimed invention. For example, based on at least the reasons given above, Kon does

not teach each and every element of at least Claim 1 from which Claim 6 depends upon, and Beeson fails to make up for Kon's deficiencies.

For example, Kon et al. does not illustrate the use of a cell substrate for optical use, and therefore, Kon et al. does not anticipate or render obvious the present invention alone or in combination with Beeson et al.

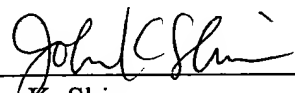
Accordingly, Appellants respectfully request reversal of the Examiner's rejection under 35 U.S.C. § 103(a).

*Conclusion*

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

  
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WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

Date: July 6, 2005



**CLAIMS APPENDIX**

CLAIMS 1 and 3-6 ON APPEAL:

1. (previously presented): A liquid-crystal cell substrate which comprises a multilayer structure having a surface roughness,  $R_a$ , of 0.8 nm or lower on at least one side and having an average thickness of from 100 to 800  $\mu\text{m}$ , wherein the multilayer structure comprises a layer of a cured epoxy resin as a base layer.

2. (canceled).

3. (previously presented): A resinous multilayer structure for optical use which comprises a resinous multilayer structure having a surface roughness,  $R_a$ , of 0.8 nm or lower on at least one side and having an average thickness of from 100 to 800  $\mu\text{m}$ ,

wherein the resinous multilayer structure comprises a layer of a cured epoxy resin as a base layer, and

wherein the resinous multilayer structure further comprises a transparent hard coat layer having a thickness of 0.1  $\mu\text{m}$  or larger as a surface layer and a poly(vinyl alcohol)-based gas barrier layer as an intermediate layer between the hard coat layer and the base layer.

4. (previously presented): The liquid-crystal cell substrate for optical use of claim 1, wherein the surface roughness  $R_a$  is 0.2 nm or lower.

5. (previously presented): The liquid-crystal cell substrate for optical use of claim 1, wherein the average thickness is from 200 to 500  $\mu\text{m}$ .

6. (previously presented): The liquid-crystal cell substrate for optical use of claim 1, wherein the epoxy resin is selected from the group consisting of a bisphenol A type epoxy resin, an alicyclic type epoxy resin, and a triglycidyl isocyanurate type epoxy resin.

**EVIDENCE APPENDIX:**

Pursuant to 37 C.F.R. § 41.37(c)(1)(ix), submitted herewith are copies of any evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 or any other evidence entered by the Examiner and relied upon by Appellant in the appeal.

NONE

APPEAL BRIEF UNDER 37 C.F.R. § 41.37  
U.S. Appl. No. 09/769,376

Q62053

**RELATED PROCEEDINGS APPENDIX**

Submitted herewith are copies of decisions rendered by a court or the Board in any proceeding identified about in Section II pursuant to 37 C.F.R. § 41.37(c)(1)(ii).

NONE